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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

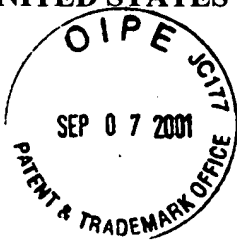
In re application of:

Mark D. Roberts

Appl. No. 09/878,923  
Confirmation No. 2854

Filed: June 13, 2001

For: SYSTEM AND METHOD FOR  
APPLYING DELAY CODES TO  
PULSE TRAIN SIGNALS



Art Unit: 2634

Examiner: (Unassigned)

Atty. Docket No.: 28549-165405

Customer No.:



26694

PATENT TRADEMARK OFFICE

**SUBMISSION OF SUBSTITUTE DRAWINGS**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Submitted herewith are 12 sheets of formal drawings containing Figures 1-10.

Date: September 7, 2001

Respectfully submitted,

Robert S. Babayi

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The diagram illustrates two parallel signal waveforms, 10 and 12, plotted against time T. Waveform 10 consists of segments 10a, 10b, 10c, 10d, 10e, 10f, and 10g. Segments 10c and 10e are shaded with diagonal lines. Waveform 12 consists of segments 12a, 12b, 12c, 12d, 12e, 12f, and 12g. Segments 12c and 12e are also shaded with diagonal lines. A vertical dashed line marks a specific position X on the time axis. The segments 10c and 12c are aligned vertically, as are 10e and 12e. A bracket labeled 10 spans the first seven segments of the top waveform, and a bracket labeled 12 spans the first seven segments of the bottom waveform.

1

1. James Earl Ray, born May 19, 1928, London, England, died April 27, 1968, London, England.  
2. John Edgar Hoover, born January 1, 1895, Alton, Illinois, died October 6, 1982, Washington, D.C.  
3. William F. Buckley, Jr., born January 24, 1925, Jamesport, New York, died October 13, 2008, New York City, New York.  
4. Robert Kennedy, born May 28, 1925, Brooklyn, New York, died June 6, 1968, Los Angeles, California.  
5. John F. Kennedy, born May 29, 1917, Boston, Massachusetts, died November 22, 1963, Dallas, Texas.  
6. Lyndon B. Johnson, born August 27, 1908, Stamlet, Texas, died July 24, 1973, Washington, D.C.  
7. Hubert H. Humphrey, born April 27, 1896, Wadena, Minnesota, died October 30, 1962, Washington, D.C.  
8. Walter F. Mondale, born January 1, 1927, Wadena, Minnesota, died October 18, 2002, Washington, D.C.  
9. Richard M. Nixon, born January 9, 1913, Yorba Linda, California, died August 9, 1994, Washington, D.C.  
10. Barry M. Goldwater, born January 1, 1925, Phoenix, Arizona, died May 29, 2004, Phoenix, Arizona.  
11. George Wallace, born August 25, 1919, Granville, Ohio, died September 15, 1998, Washington, D.C.  
12. George H. W. Bush, born July 6, 1919, Milton, Massachusetts, died November 30, 1998, Washington, D.C.  
13. George W. Bush, born July 7, 1946, Wickliffe, Texas, died June 26, 2018, Washington, D.C.  
14. Donald Trump, born June 14, 1946, Queens, New York, died February 20, 2020, New York City, New York.  
15. Joe Biden, born January 20, 1942, Scranton, Pennsylvania, died July 18, 2023, Washington, D.C.  
16. Joe Biden, born January 20, 1942, Scranton, Pennsylvania, died July 18, 2023, Washington, D.C.  
17. Joe Biden, born January 20, 1942, Scranton, Pennsylvania, died July 18, 2023, Washington, D.C.  
18. Joe Biden, born January 20, 1942, Scranton, Pennsylvania, died July 18, 2023, Washington, D.C.  
19. Joe Biden, born January 20, 1942, Scranton, Pennsylvania, died July 18, 2023, Washington, D.C.  
20. Joe Biden, born January 20, 1942, Scranton, Pennsylvania, died July 18, 2023, Washington, D.C.

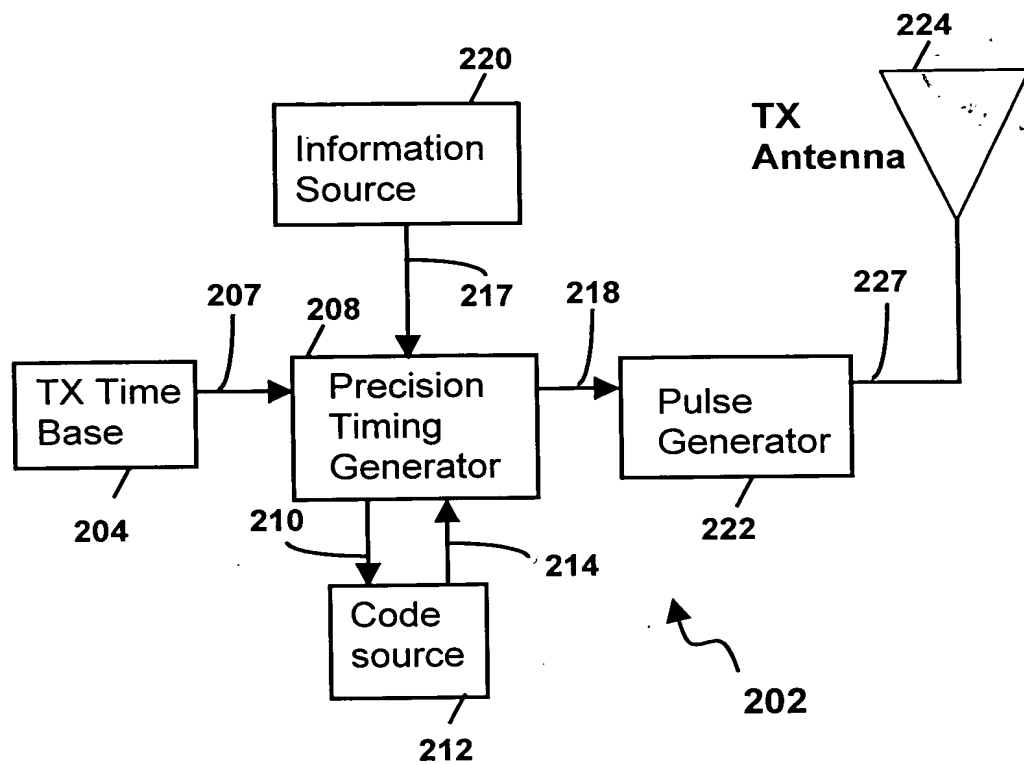


FIG. 2

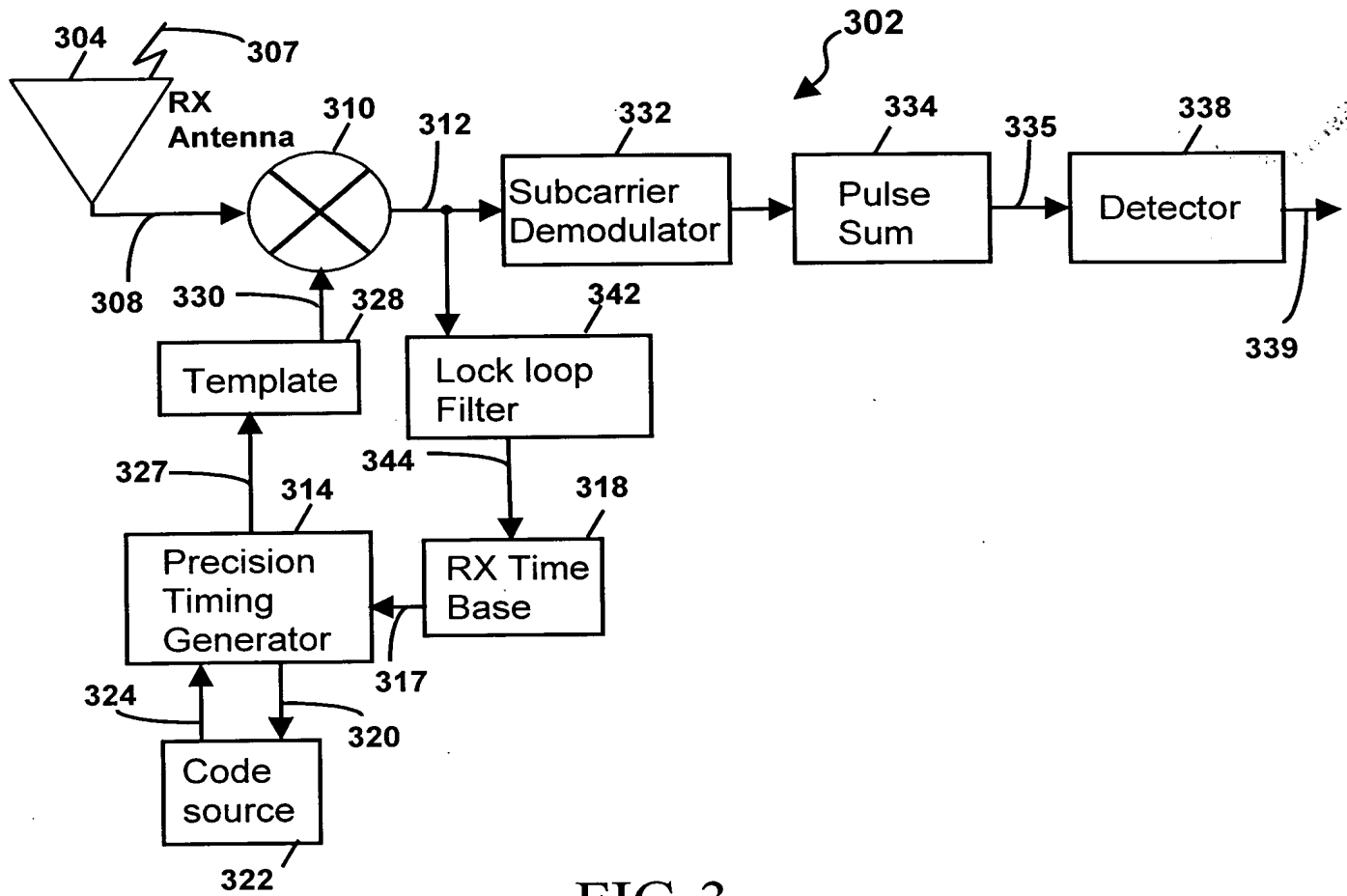


FIG. 3

FIG. 4a

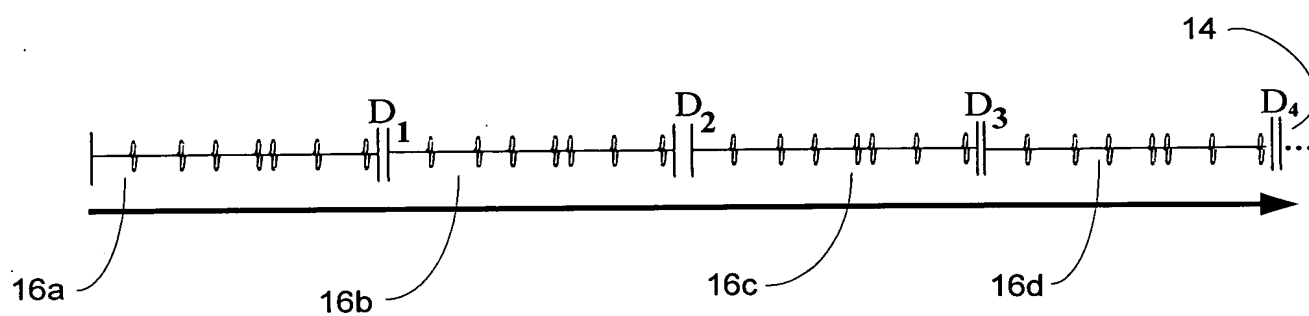
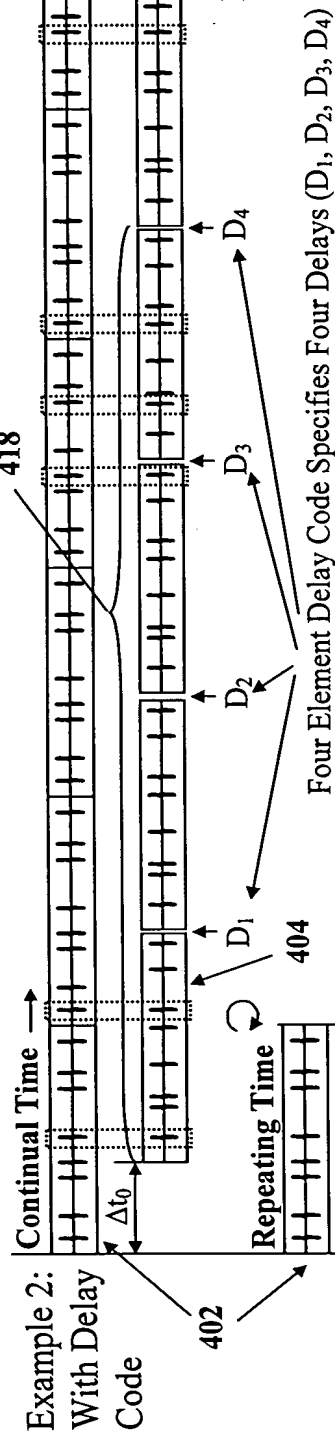
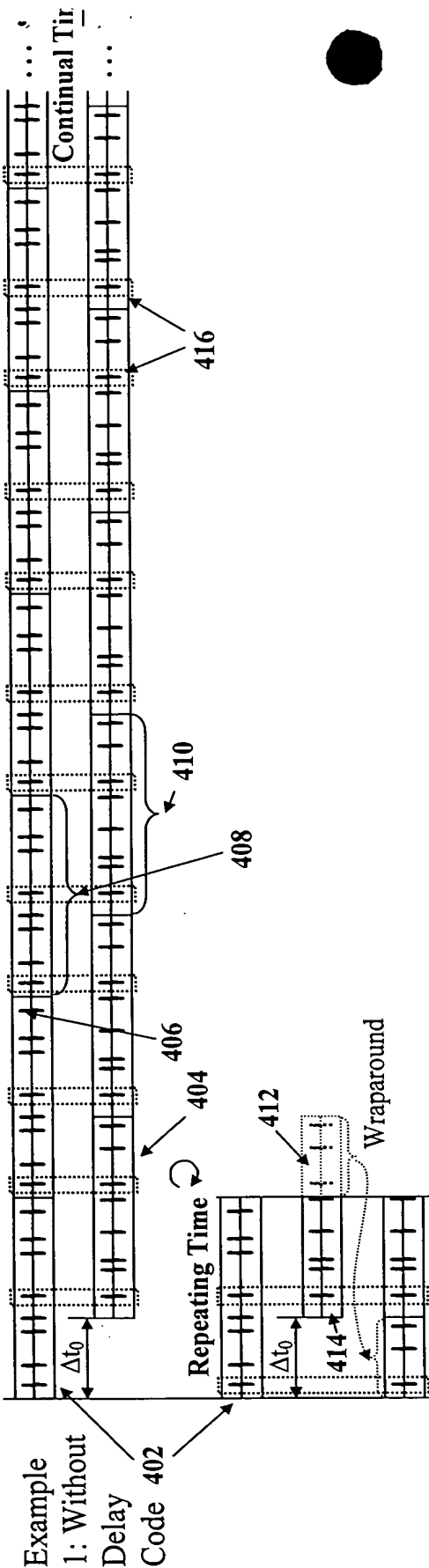


FIG. 4a



$$\Delta t_1 = \Delta t_0 + D_1$$

$$\Delta t_2 = \Delta t_0 + D_1 + D_2$$

$$\Delta t_3 = \Delta t_0 + D_1 + D_2 + D_3$$

$$\Delta t_4 = \Delta t_0 + D_1 + D_2 + D_3 + D_4$$

$$\Delta t_5 = \Delta t_0 + D_1 + D_2 + D_3 + D_4 + D_1$$

Four Element Delay Code Specifies Four Delays ( $D_1, D_2, D_3, D_4$ )

FIG. 4b



# Quadratic Congruential Codes

$$y(k) = i k^2 \bmod 7$$

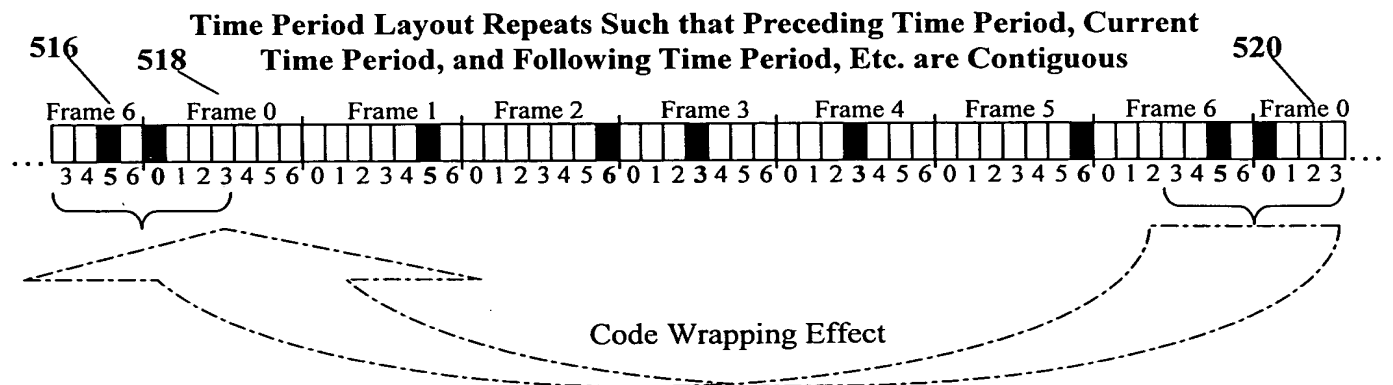
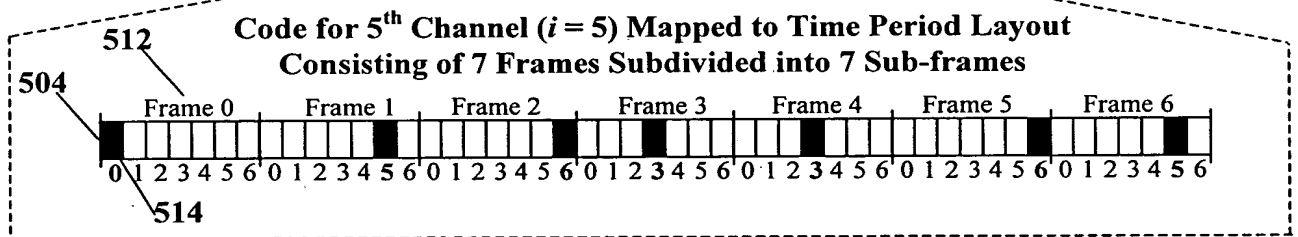
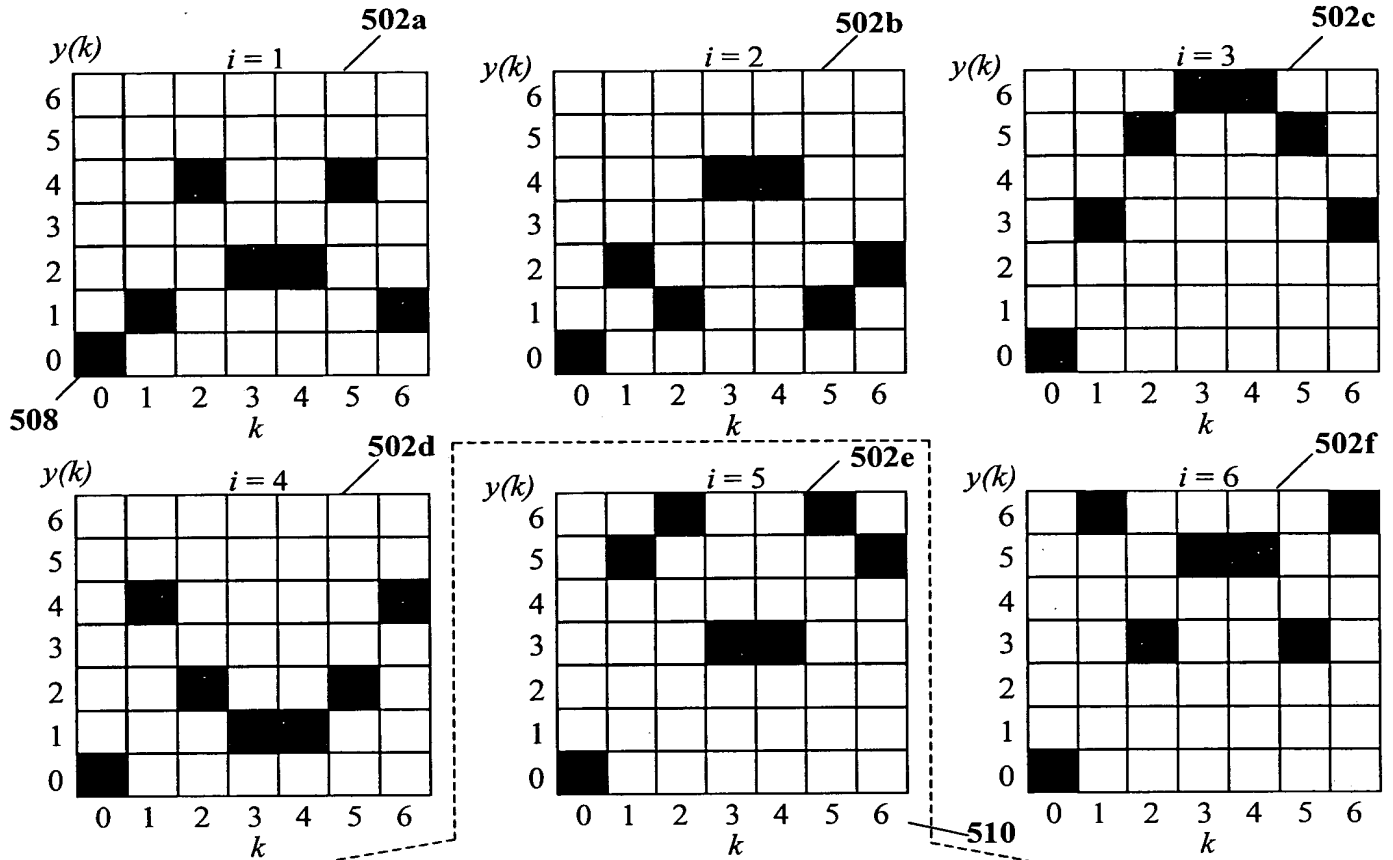


FIG. 5

Cross-correlation of 5<sup>th</sup> and 6<sup>th</sup> Codes (Time Offsets in 1 Subframe Increments)

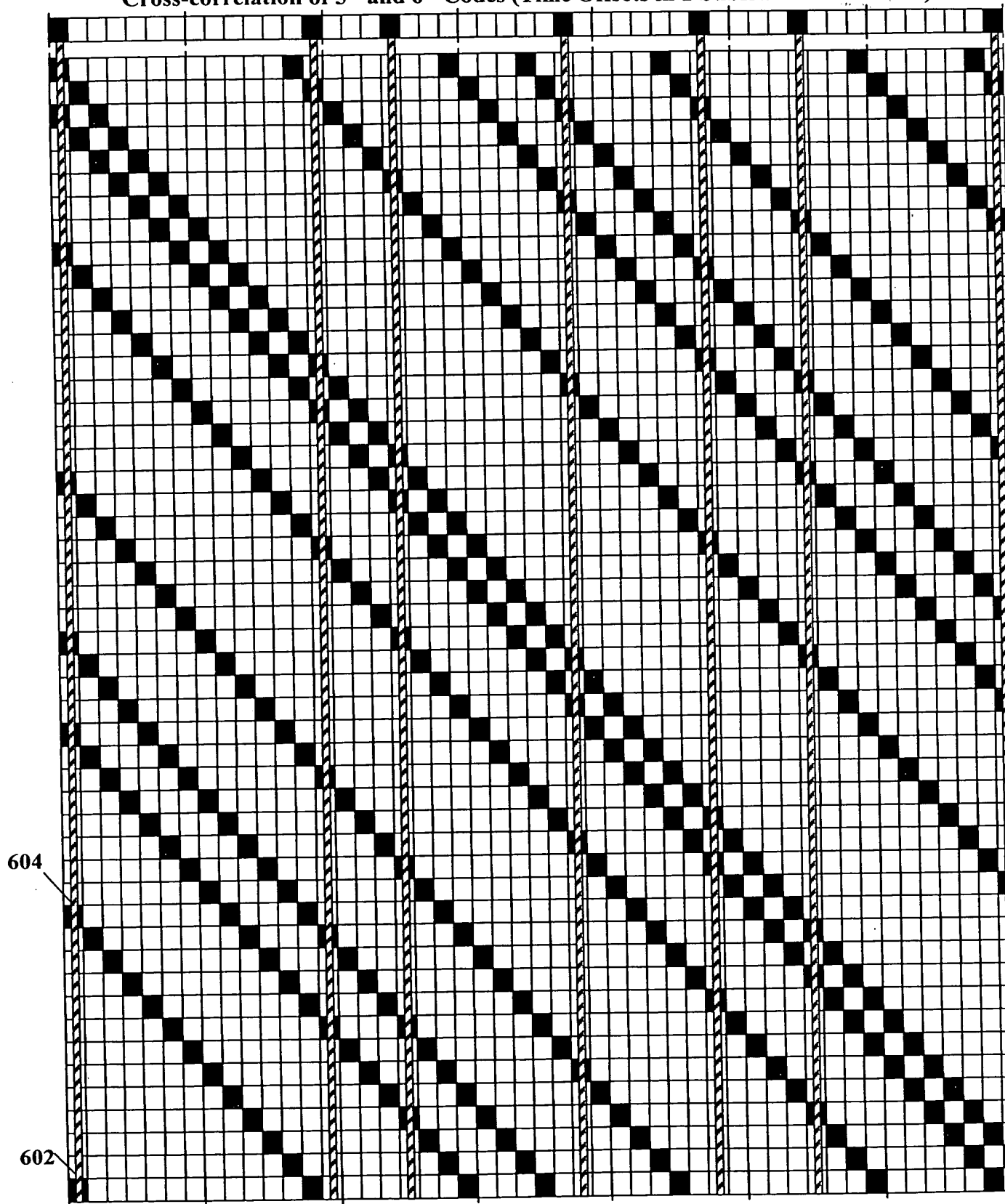


FIG. 6



### Cross-correlation of 5th and 6th Codes

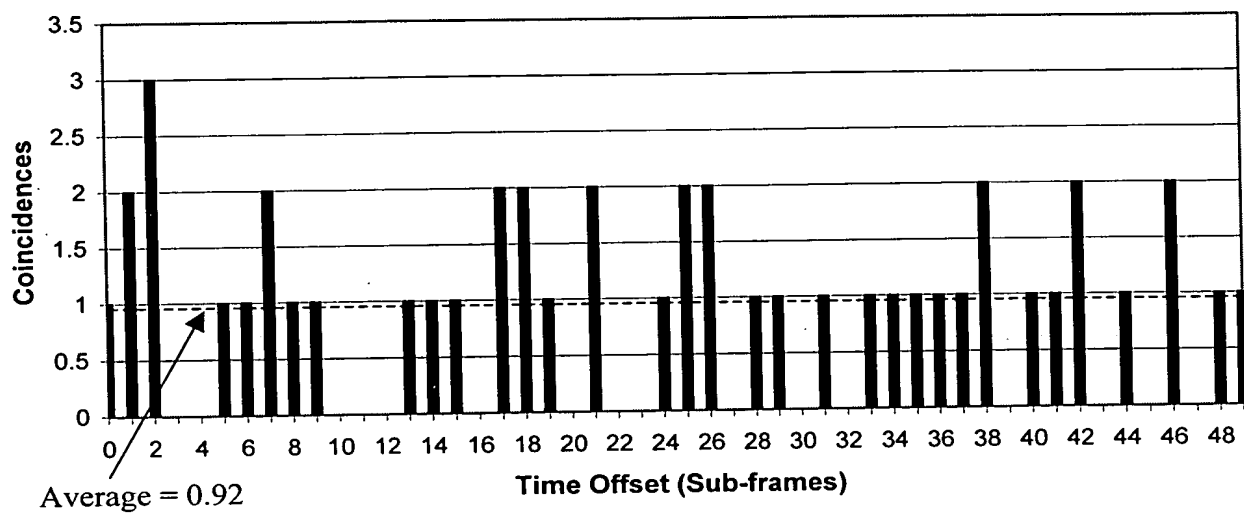


FIG. 7

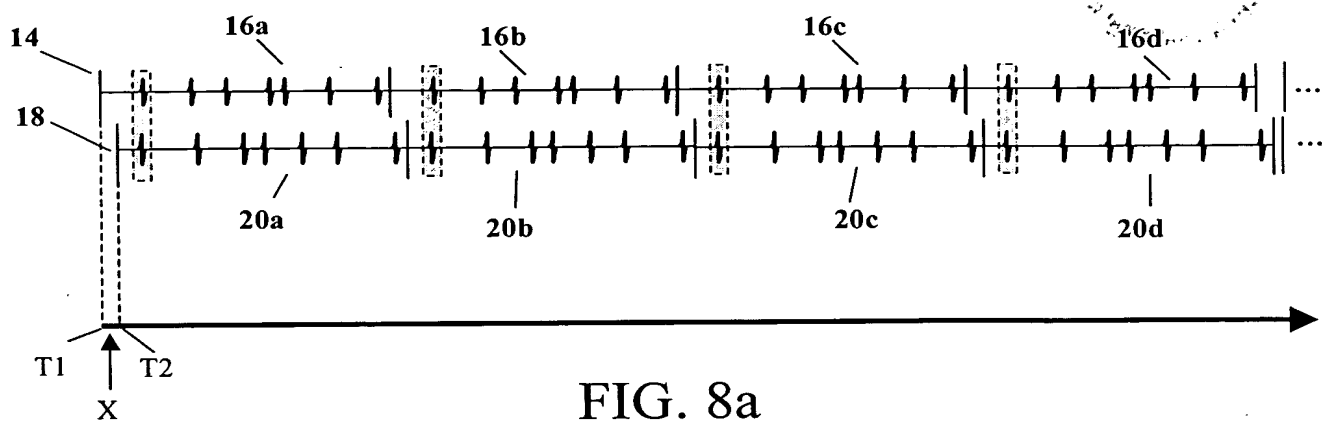


FIG. 8a

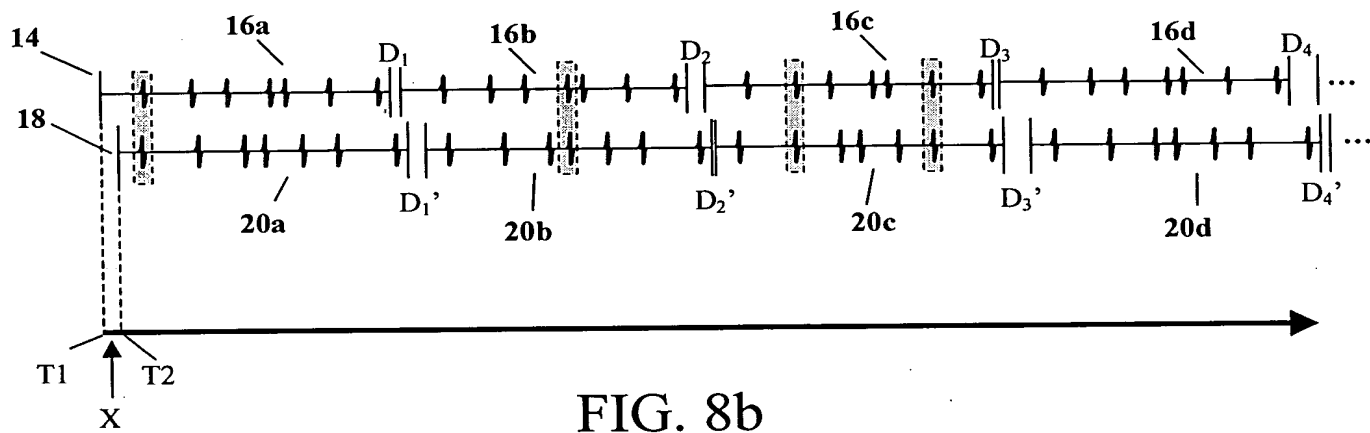


FIG. 8b

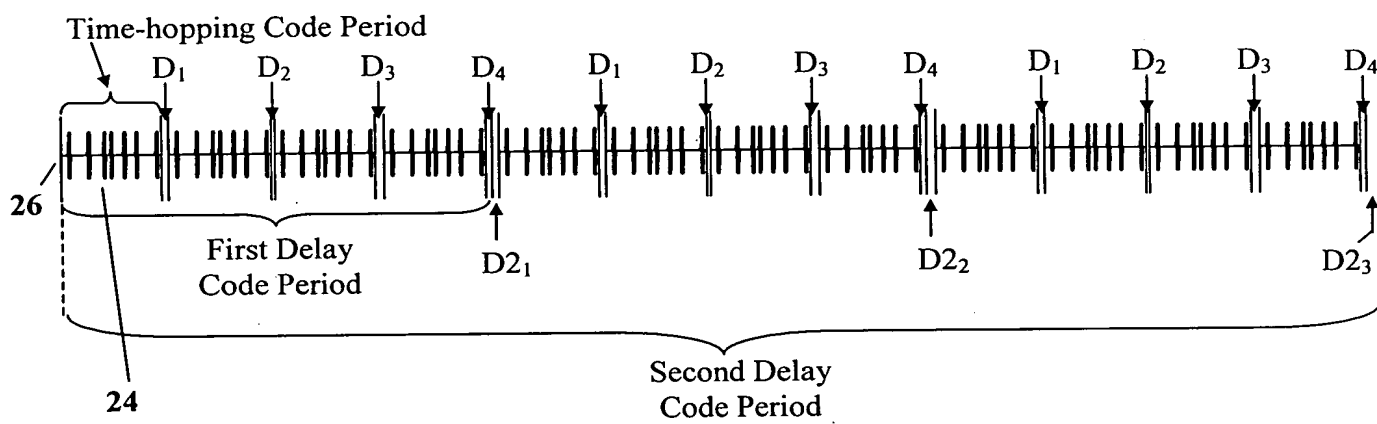


FIG. 9

